PATENT COOPERATION TREATY

PCT

TRANSLATION INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P2003, 0796WO			ice	FOR FURTHER A	R FURTHER ACTION See Form PCT/IPEA/416					
International application No.				International filing da	nte (day/month/year)	Priority date (day/month/year)				
PCT/EP2004/011304			304	08.10.200		12.11.2003				
				onal classification and						
H01 L31/0232. G02B5/18										
Applicant AUSTRIAMICROSYSTEMS AG										
1.	1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.									
2.	This REPORT consists of a total of 6 sheets, including this cover sheet.									
3.										
	a. 🔀	(sent to the	applicant and	to the International Bu	reau) a total of 4	sheets, as follows:				
	sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).									
	sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental									
	. —	Box.								
	b (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))									
	, containing a sequence listing and/or tables									
	related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).									
4.	This rep	port contains inc	dications relati	ng to the following iter	ns:					
	Box No. I Basis of the report									
		Box No. II	Priority							
	Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability									
	Box No. IV Lack of unity of invention									
	\boxtimes	Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement								
		Box No. VI Certain documents cited								
		Box No. VII Certain defects in the international application								
	Box No. VIII Certain observations on the international application									
Date of submission of the demand					Date of completion of this report					
Name and mailing address of the IPEA/EP					Authorized officer					
Facsimile No.					Telephone No.					

International application No.

PCT/EP2004/011304

Box	No. I	I Basis of the report								
1.	1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.									
	This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of: international search (Rule 12.3 and 23.1(b)) publication of the international application (Rule 12.4)									
2.	rece	international preliminary examination (Rule 55.2 and/or 55.3) With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report): the international application as originally filed/furnished the description:								
		pages 1-10 pages*		as originally filed/furnished						
		pages*	_	_						
	\square		_ received by this radiionty on							
		nos.		as originally filed/furnished						
		nos.*	as amended (togethe	r with any statement) under Article 19						
		nos.* _ 1-17		10.06.2005 with letter						
		nos.*	received by this Authority on							
	\boxtimes	the drawings:								
		sheets 1/1		as originally filed/furnished						
		sheets*	received by this Authority on							
		sheets*								
		a sequence listing and/or any related table(s) – see Suppler								
3.		The amendments have resulted in the cancellation of:								
			the description, pages the claims, nos							
4.		This report has been established as if (some of) the amenthey have been considered to go beyond the disclosure as	ndments annexed to this report and	listed below had not been made, since						
		the description, pages	the description, pages							
		the claims, nos.								
		the sequence listing (specify):								
		any table(s) related to sequence listing (specify):								
*	If ite	em 4 applies, some or all of those sheets may be marked "su	perseded."							

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

 1. Statement
 Novelty (N)
 Claims 1-16 YES

 Claims 17
 NO

 Inventive step (IS)
 Claims 10, 13, 14 YES

 Claims 1-9, 11, 12, 15-17
 NO

Claims 1-17 YES

2. Citations and explanations (Rule 70.7)

Industrial applicability (IA)

This report makes reference to the following documents:

- D1: US-A-3 704 377 (LEHOVEC KURT), 28 November 1972 (1972-11-28)
- D3: EP-A-0 807 982 (COMMISSARIAT ENERGIE ATOMIQUE), 19
 November 1997 (1997-11-19)
- D4: DE 195 18 303 A (KERNFORSCHUNGSANLAGE JUELICH), 21 November 1996 (1996-11-21)
- 1. Document D3 is regarded as the prior art closest to the subject matter of claim 1 and discloses:

an optoelectronic component with a semiconductor chip having multiple radiation-sensitive zones (46, 50) for detecting electromagnetic radiation (4), and an optical element (diffraction grid (52)) for diffracting (column 2, lines 10-12) the electromagnetic radiation (4) in the radiation-sensitive zones (46, 50), the optical element being a diffractive element (column 2, lines 10-12; column 8, lines 10-30; column 10, lines 1-5; figures 5 and 7) having structures (1, p) in the order of magnitude (p=1.8 μm : column 10, line 46) of the wavelength of the electromagnetic radiation (4). The semiconductor chip has

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

multiple radiation-sensitive zones (46, 50) sensitive to shorter wavelengths (zone (50) for 5 μ m) arranged after the radiation-sensitive zones sensitive to longer wavelengths (zone (46) for 10 μ m) in the direction of the incident radiation (4) (column 9, line 42 - column 10, line 51; figure 7).

The subject matter of claim 1 therefore differs from the known component in that the optical element serves for focussing the electromagnetic radiation.

A second difference which is not presented in claim 1 is that the diffractive element of the claimed component is arranged on the front side.

However, D3 (see column 2, lines 4 and 5) explicitly mentions the possibility of arranging the diffraction grid on the front side of the component. Moreover, it is known that a diffractive element arranged in the radiation entry surface causes the electromagnetic radiation to be focussed (see, for example, D1: column 4, line 63 - column 5, line 6).

Consequently, the solution proposed in claim 1 of the present application cannot be considered inventive (PCT Article 33(3)).

2. The same reasoning also applies to claims 15 and 16. Document D3 further discloses a resin layer structuring step (column 8, lines 39-46). The subject matter of claims 15 and 16 therefore does not involve an inventive

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

step (PCT Article 33(3)).

3. Document D4 discloses the use of a zone plate (40) (D4: figure 4) for focussing electromagnetic radiation (13; 23; 33) (column 4, lines 5-13) in multiple radiation-sensitive zones (12; 22; 32) (column 3, lines 60-64) of a radiation-detecting semiconductor chip (10).

The subject matter of claim 17 is therefore not novel (PCT Article 33(2)).

- 4. The subject matter of claims 2-9, 11 and 12 does not involve an inventive step for the following reasons:
- claim 2: document D4 discloses the use of a zone plate (column 4, lines 5-13; figure 4) as diffractive element arranged on the rear side (D4: figure 3) in a configuration similar to that in figure 7 of document D3:
- claims 3 and 4: according to D3, the diffractive element is integrated in the semiconductor chip (figure 7) and the radiation to be detected measures 5 μ m, for example (column 10, line 48);
- claim 5: although D3 relates to IR detectors, a person skilled in the art would consider modifying the component disclosed in D3 slightly in order to detect light in the visible spectrum range;
- claim 6: see D3, column 10, lines 41-51;
- claims 7 and 8: the optimum embodiment of the zone plate represents a conventional measure; see, for example D4, in which the smallest ring width amounts

PCT/EP2004/011304

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

to 1.5 μ m (column 5, lines 23-26);

- claim 9: according to D3, the radiation-sensitive zones (46 and 50) are arranged precisely in focal planes; cf. the maximum intensity position mark in figure 7B, which coincides with the middle of the different wavelength zones in figure 7A;
- claims 11 and 12: see D3, column 8, lines 39-46.
- 5. The combination of features contained in dependent claim 10 is neither known from nor suggested by the available prior art, since the component in figure 7 of D3 contains two instead of three radiation-sensitive zones for detecting IR radiation. Although a person skilled in the art would consider detecting visible light, he would not be prompted to detect the primary colours red, green and blue separately.
- 6. The combination of features contained in dependent claims 13 and 14 is neither known from nor suggested by the available prior art, for the following reasons:

Document D1 (column 4, lines 50-52) discloses a phase zone plate made of a transparent material and of a non-transparent material.

Document D4 (column 5, lines 13-22) discloses a phase zone plate made of at least one absorbing or reflecting material.